CLAIMS:

1. Cross coupled folding circuit, comprising a reference voltage circuit to supply a series of m reference voltages (Vref(k) with k = 1, 2, ..., m), an amplifier circuit to provide a series of control signals (Vin – Vref(k) and – Vin + Vref(k)) in response to an input signal (Vin) and to the reference voltages (Vref(k)), and a number of differential transistor pairs in a cascade configuration controlled by said control signals, each differential pair of transistors being active in a voltage range around one of said reference voltages, characterized in that $2^n - 1$ three times cross coupled folding circuits are provided, each of which comprising three differential pairs of transistors, and, in a cascade configuration with said $2^n - 1$ folding circuits, in n-1 successive steps 2^{n-1}, 2^{n-2}, ..., 2^0 differential transistor pairs, the control signals thereof being supplied by the series of three times cross coupled folding circuits, and $m = 3(2^n - 1)$, while, to obtain complete folding, switching circuits cooperating with the transistor pairs in the last 2^{n-2} steps of the cascade configuration are provided, to supply the respective control signals to those transistors of the respective differential transistor pairs which provide complete folding.

2. Cross coupled folding circuit according to claim 1, characterized in that the cross coupled folding circuit is constituted by three successively active three times cross coupled folding circuits (D1, D2, D3) and, in cascade therewith, a further three times cross coupled folding circuit (D4) and a switching circuit is provided to interchange the control signals for the further three times folding circuit (D4) supplied by the first (D1) and the last (D3) active three times folding circuit (n = 2, Fig. 9).

3. Cross coupled folding circuit according to claim 1, characterized in that the cross coupled folding circuit is constituted by 3 three successively active three times cross coupled folding circuits (D1, D2, D3) and, in cascade therewith, a further three times cross coupled folding circuit (D4) and a switching circuit is provided to invert the control signals for the further three times folding circuit (D4), supplied by the middle (D2) active three times folding circuit (n = 2, Figs. 10 and 11).

4. Cross coupled folding circuit according to claim 1, characterized in that the cross coupled folding circuit is constituted by seven successively active three times cross coupled folding circuits (S1 – S7) and, in cascade therewith, a seven times cross coupled folding circuit (W) comprising in three successive steps 4, 2 and 1 differential transistor pairs, and 3 switching circuits (Q1 – Q3) are provided to invert the control signals for the differential transistor pairs in the last two steps, supplied by three of the seven active three times folding circuits (n = 3, Fig. 14 with 13).

5. Cross coupled folding circuit according to claim 3 or 4, characterized in that a switching circuit is provided with switching transistors to pass either the control signals to the basis of the first and second transistor of the differential transistor pair respectively or to the basis of the second and first transistor of said differential transistor pair respectively.

6. Cross coupled folding circuit according to claim 5, characterized in that the switching transistors are controlled by difference signals derived from voltages obtained by resistive interpolation between output signals of two of the $2^n - 1$ successively active three times cross coupled folding circuits.

7. Analog-to-digital converter provided with a folding circuit according any one of the preceding claims.